

McIntosh

MC 2300

POWER AMPLIFIER



SERVICE INFORMATION

STARTING WITH SERIAL NO. 1Y001

McINTOSH LABORATORY INC. 2 CHAMBERS STREET BINGHAMTON, NEW YORK

MC 2300

ELECTRICAL SPECIFICATIONS

PERFORMANCE

McIntosh audio power ratings are in accordance with the Federal Trade Commission Regulation of November 4, 1974 concerning power output claims for amplifiers used in home entertainment products.

POWER OUTPUT**STEREO**

300 watts minimum sine wave continuous average power output, per channel, both channels operating into 0.5 ohm, 1 ohm, 2 ohms, 4 ohms, 8 ohms, or 16 ohms load impedance, which is:

- 12.2 volts RMS across 0.5 ohm
- 17.3 volts RMS across 1 ohm
- 24.5 volts RMS across 2 ohms
- 34.6 volts RMS across 4 ohms
- 49.0 volts RMS across 8 ohms
- 69.3 volts RMS across 16 ohms

MONO

600 watts minimum sine wave continuous average power output into 0.25 ohm, 0.50 ohm, 1 ohm, 2 ohms, or 8 ohms load impedance, which is:

- 12.2 volts RMS across 0.25 ohm
- 17.3 volts RMS across 1 ohm
- 36.6 volts RMS across 2 ohms
- 49.0 volts RMS across 4 ohms
- 69.3 volts RMS across 8 ohms

OUTPUT LOAD IMPEDANCE**STEREO**

0.5 ohm, 1 ohm, 2 ohms, 4 ohms, 8 ohms and 16 ohms; separate terminals are provided for each output

MONO

0.25 ohm, 0.5 ohm, 1 ohm, 2 ohms, 4 ohms and 8 ohms; separate terminals are provided for each output

RATED POWER BAND

20 Hz to 20,000 Hz

TOTAL HARMONIC DISTORTION**STEREO**

0.25% maximum harmonic distortion at any power level from 250 milliwatts to 300 watts per channel from 20 Hz to 20,000 Hz, both channels operating

MONO

0.25% maximum harmonic distortion at any power level from 250 milliwatts to 600 watts from 20 Hz to 20,000 Hz

OUTPUT POWER MONITOR METER

Meter is calibrated to read +3.0 dB when amplifier produces 300 watts. Meter range switch is provided to increase meter sensitivity by 10 dB or 20 dB. Calibration accuracy at 0 dB reading is $\pm 2.0\%$ at all frequencies; meter range accuracy is $\pm 5.0\%$.

INTERMODULATION DISTORTION**STEREO**

0.25% if instantaneous peak power output is 600 watts or less per channel with both channels operating for any combination of frequencies, 20 Hz to 20,000 Hz

MONO

0.25% if instantaneous peak power output is 1200 watts or less per channel with both channels operating for any combination of frequencies, 20 Hz to 20,000 Hz

FREQUENCY RESPONSE (at 1 watt output)**STEREO**

20 Hz to 20,000 Hz, +0 -0.5 dB; 1, 4, 8 or 16 ohms;
+0 -1.0 dB; 0.5 or 2 ohms
12 Hz to 35,000 Hz, +0 -1.5 dB

MONO

20 Hz to 20,000 Hz, +0 -0.5 dB; 1, 4, 8 or 16 ohms;
+0 -1.0 dB; 0.25 or 1.0 ohm
12 Hz to 35,000 Hz, +0 -1.5 dB

NOISE AND HUM

90 dB below rated output

RATINGS**OUTPUT VOLTAGES**

25 volts, stereo and mono; 70 volts, stereo and mono for distribution lines

DAMPING FACTOR

27 at 0.5 ohm output, 50 at 1 ohm output, 29 at 2 ohms output, 21 at 4 ohms output, 14 at 8 ohms output

INPUT IMPEDANCE

200,000 ohms

INPUT SENSITIVITY

0.5 volt. Level control provided for higher input voltage

GENERAL INFORMATION**POWER REQUIREMENTS**

120 volts 50/60 Hz, 160 watts at zero signal output,
1400 watts at rated output

SEMICONDUCTOR COMPLEMENT

46 silicon transistors

16 diodes, rectifiers and bridge rectifiers

MECHANICAL INFORMATION**SIZE**

Front panel measures 19 inches wide (48.26 cm) by 10½ inches high (26.67 cm). Chassis measures 17 inches wide (43.18 cm) by 10 inches high (25.4 cm) by 17 inches deep (43.18 cm), including connectors. Clearance in front of mounting panel including knobs 2 inches (5.08 cm)

FINISH

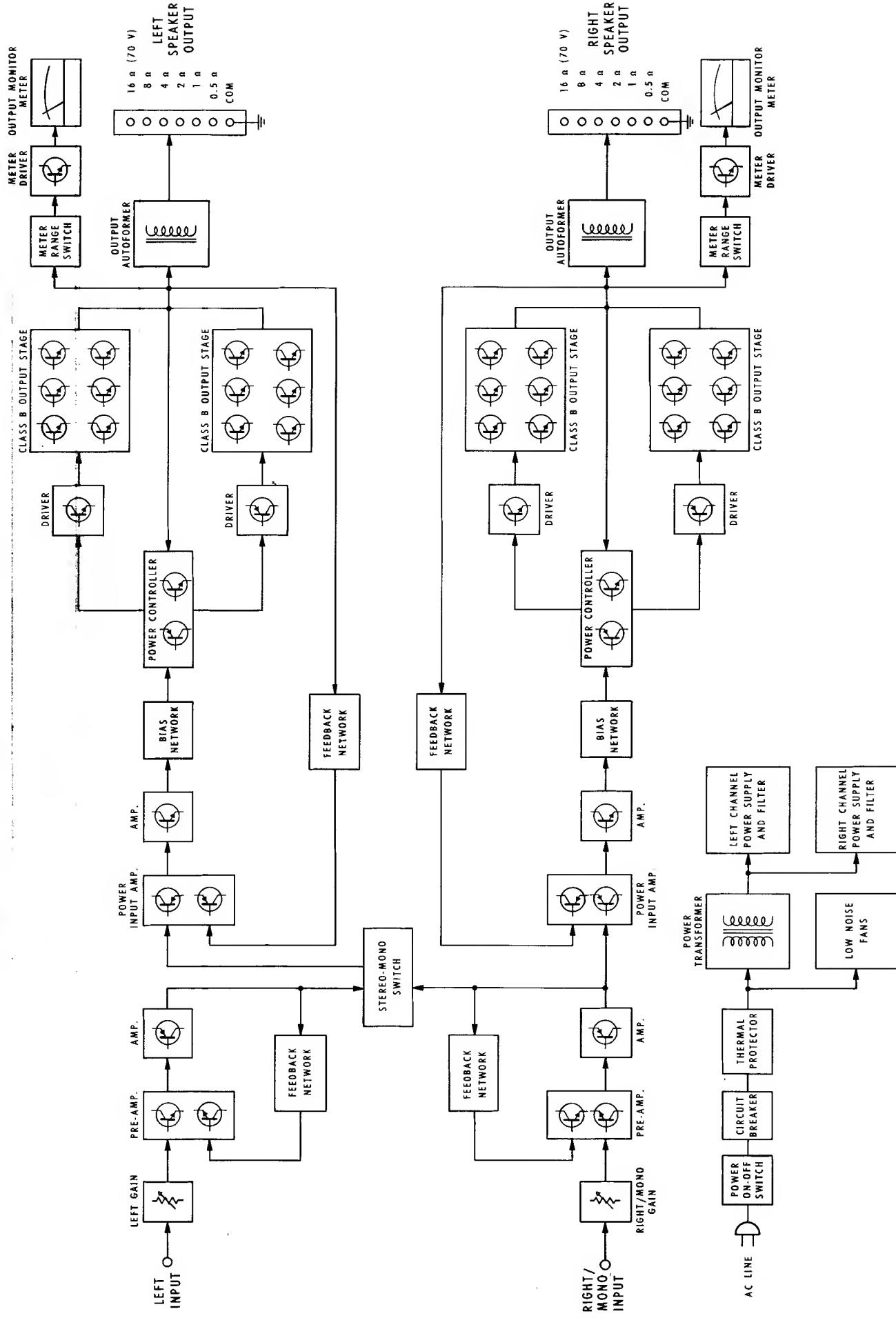
Front panel is anodized gold and black. Chassis is black baked enamel.

MOUNTING

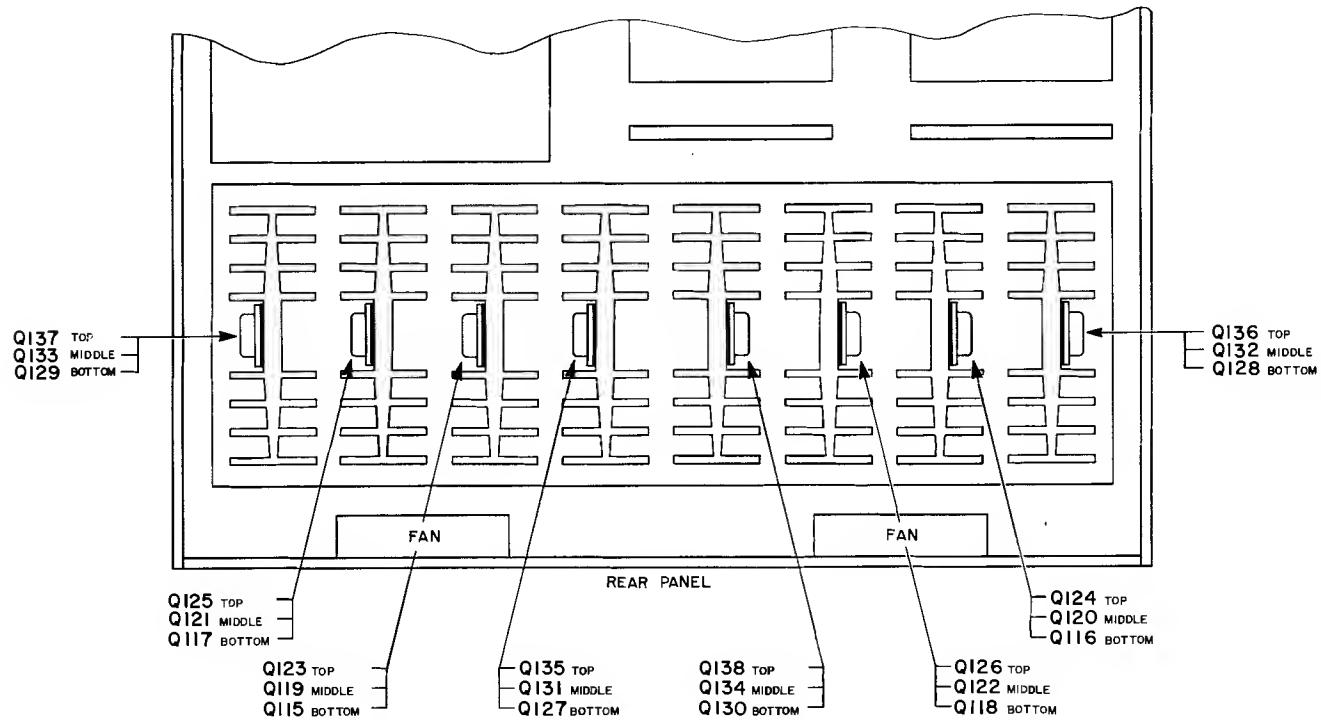
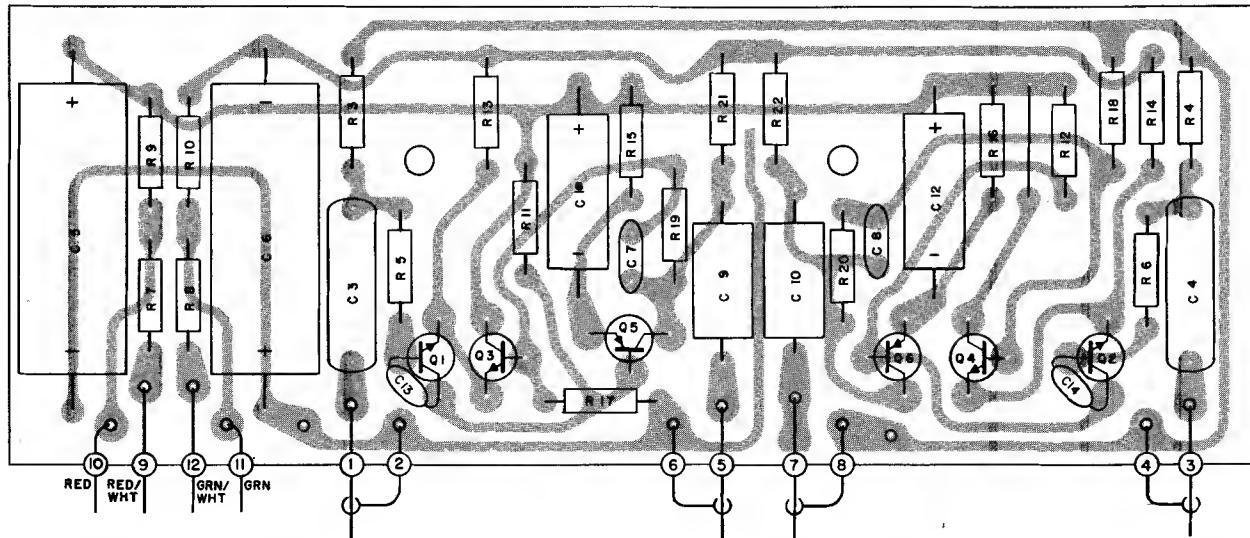
Standard 19" (48.26 cm) rack mounting

WEIGHT

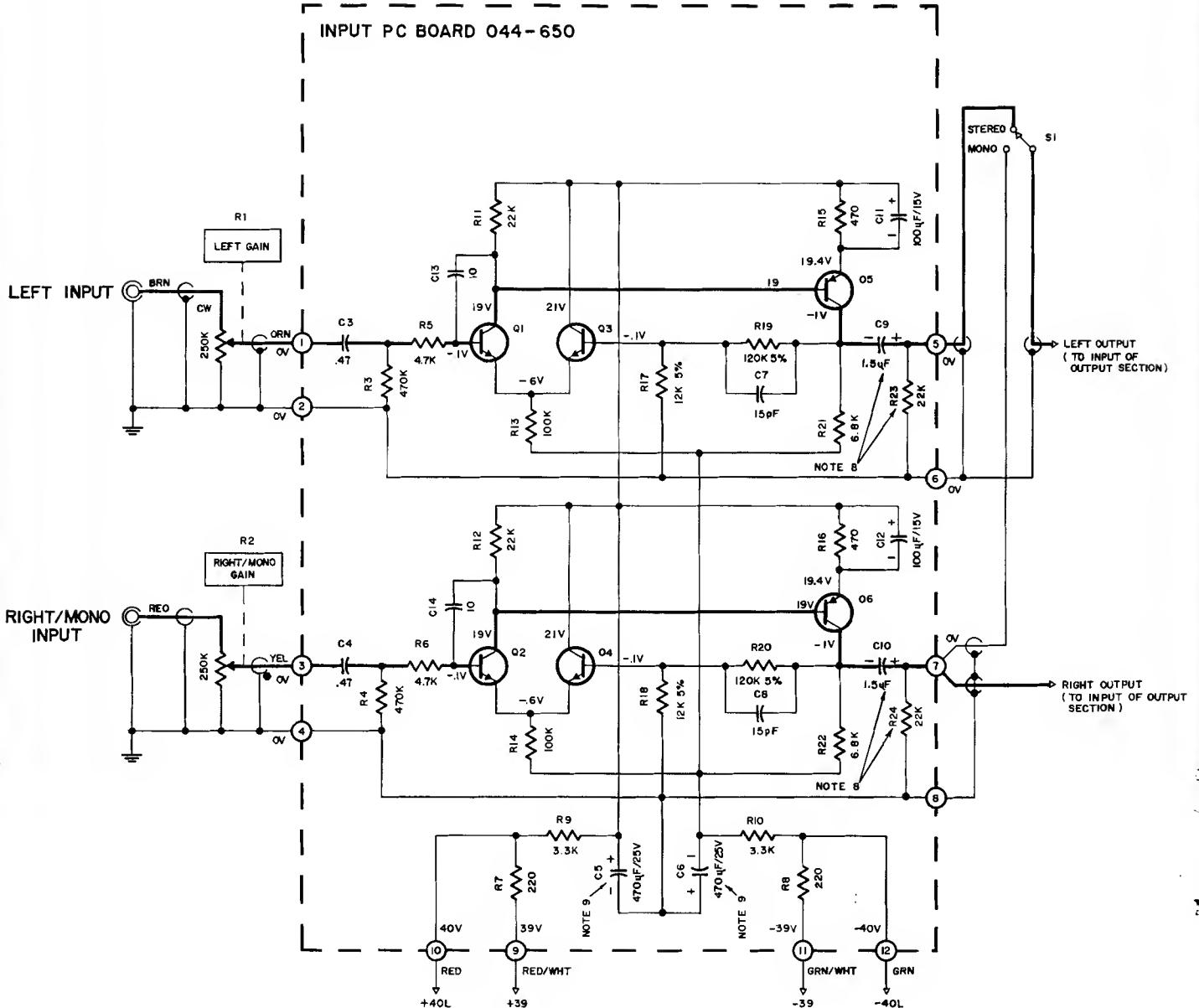
128 pounds (58.06 kg) net, 143 pounds (64.86 kg) in shipping carton



INPUT SECTION PRINTED CIRCUIT BOARD 044-650

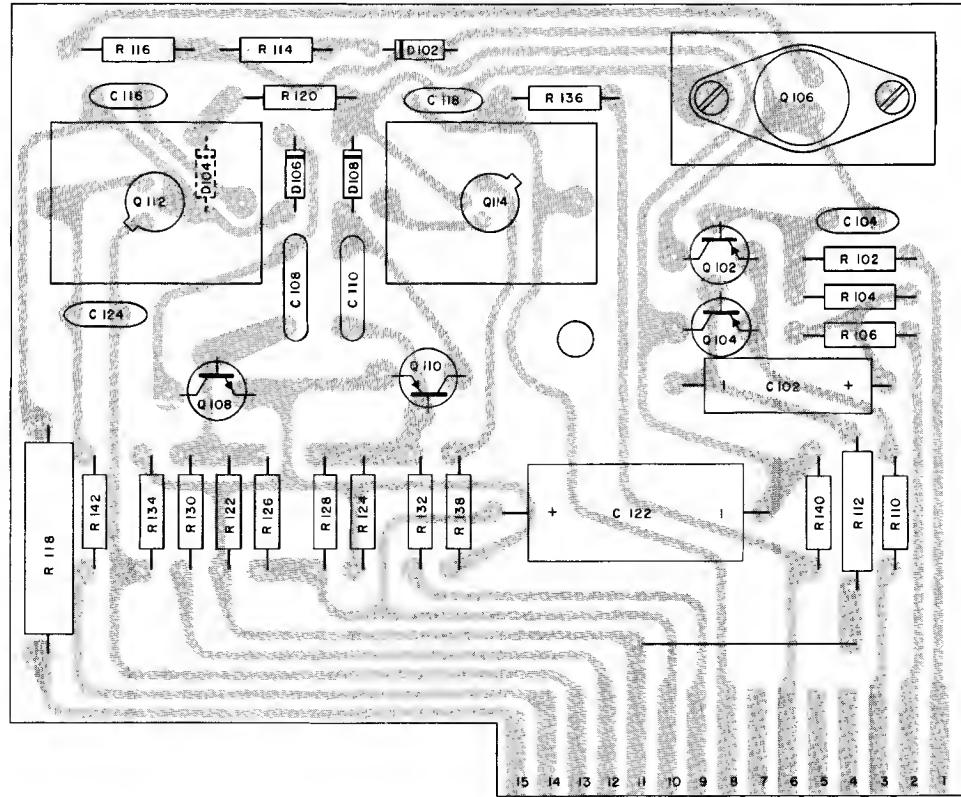


LOCATION OF TRANSISTORS NOT ON PC BOARDS

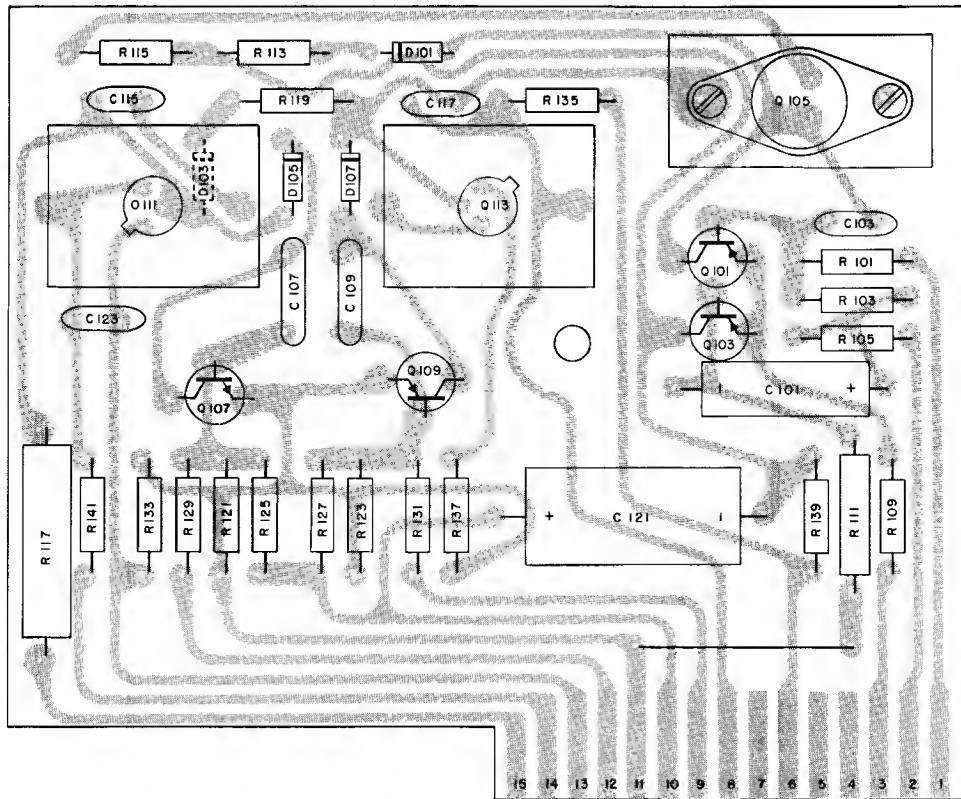


INPUT SECTION

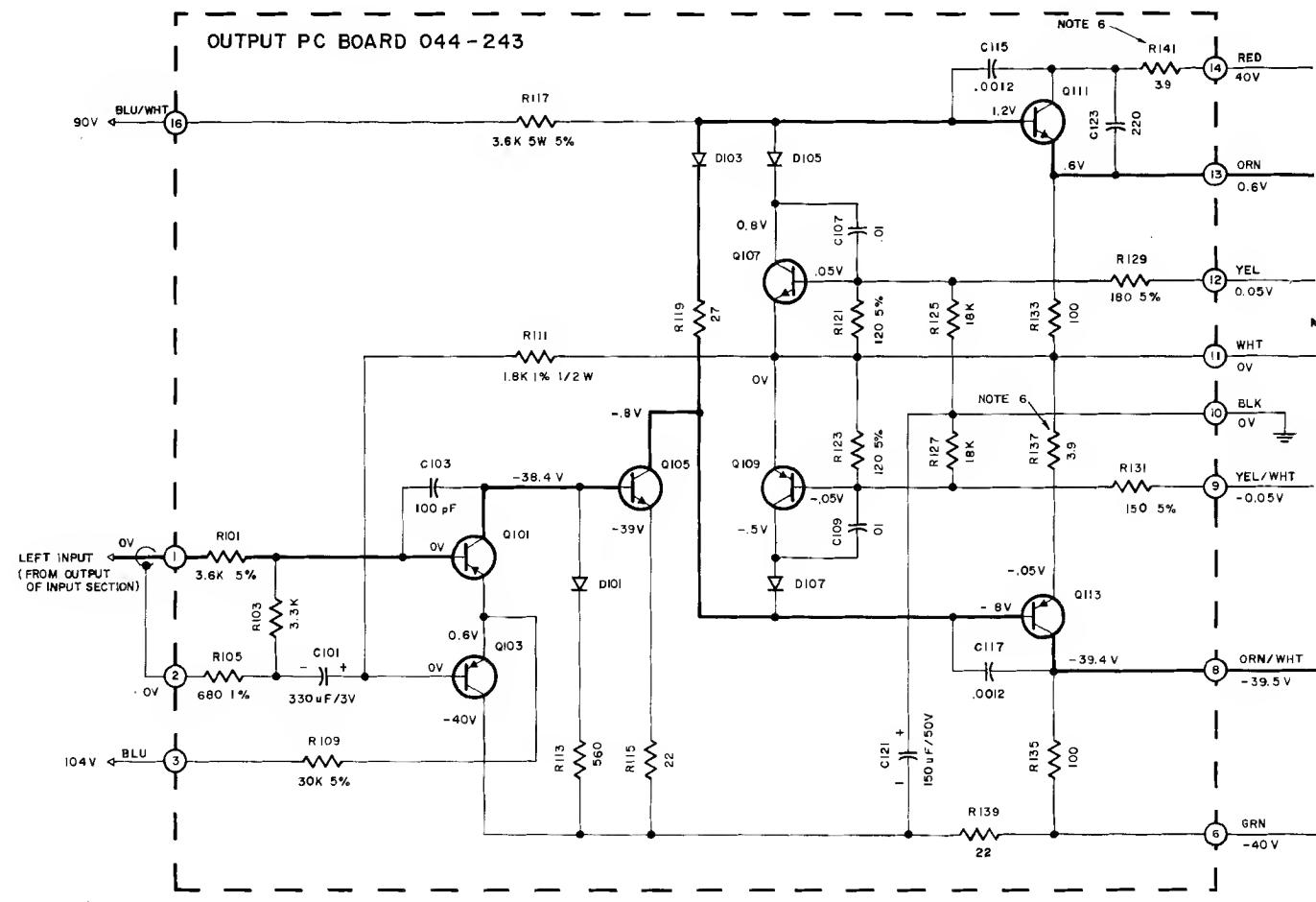
RIGHT CHANNEL POWER OUTPUT PRINTED CIRCUIT BOARD 044-243



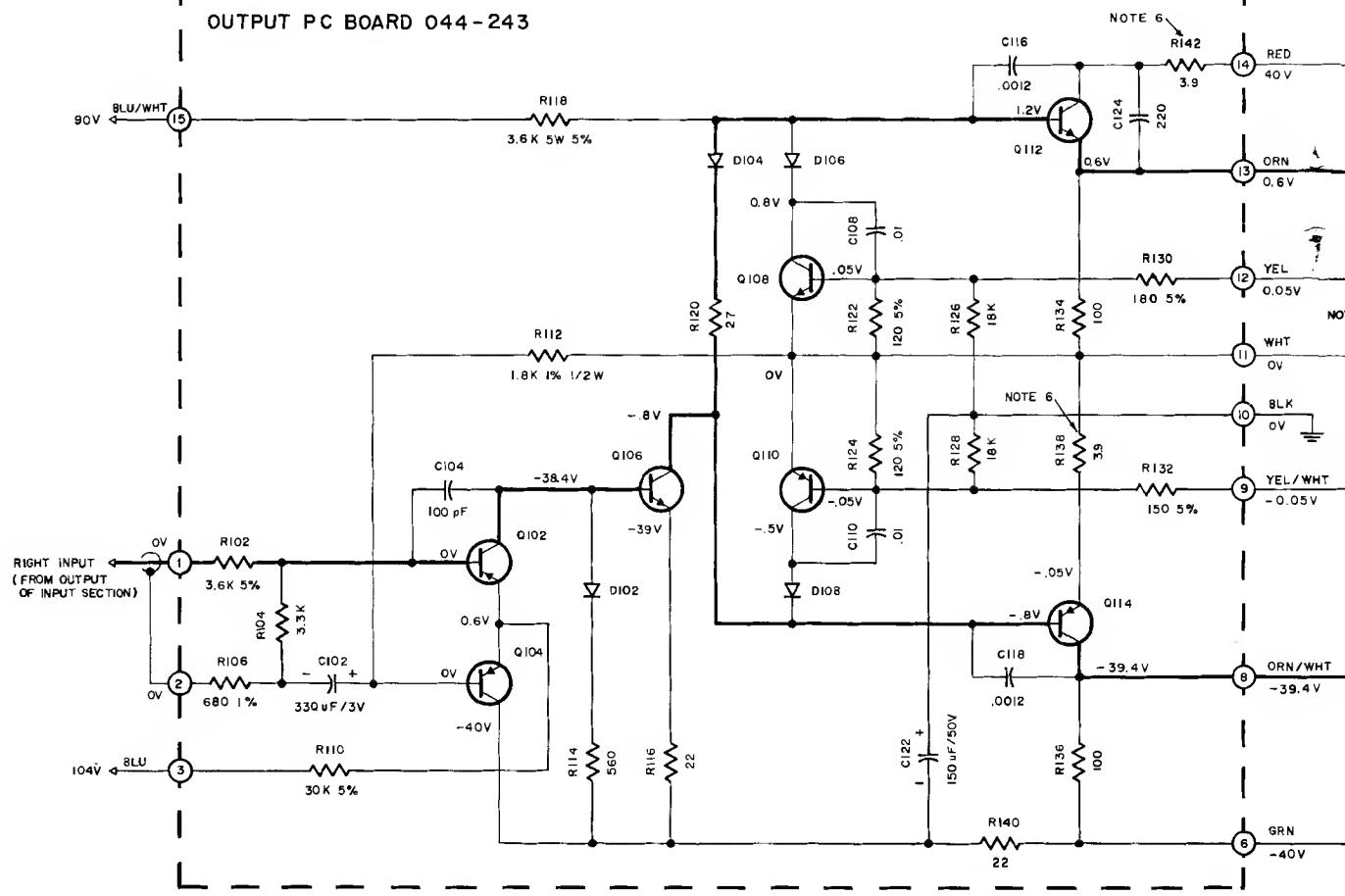
LEFT CHANNEL POWER OUTPUT PRINTED CIRCUIT BOARD 044-243

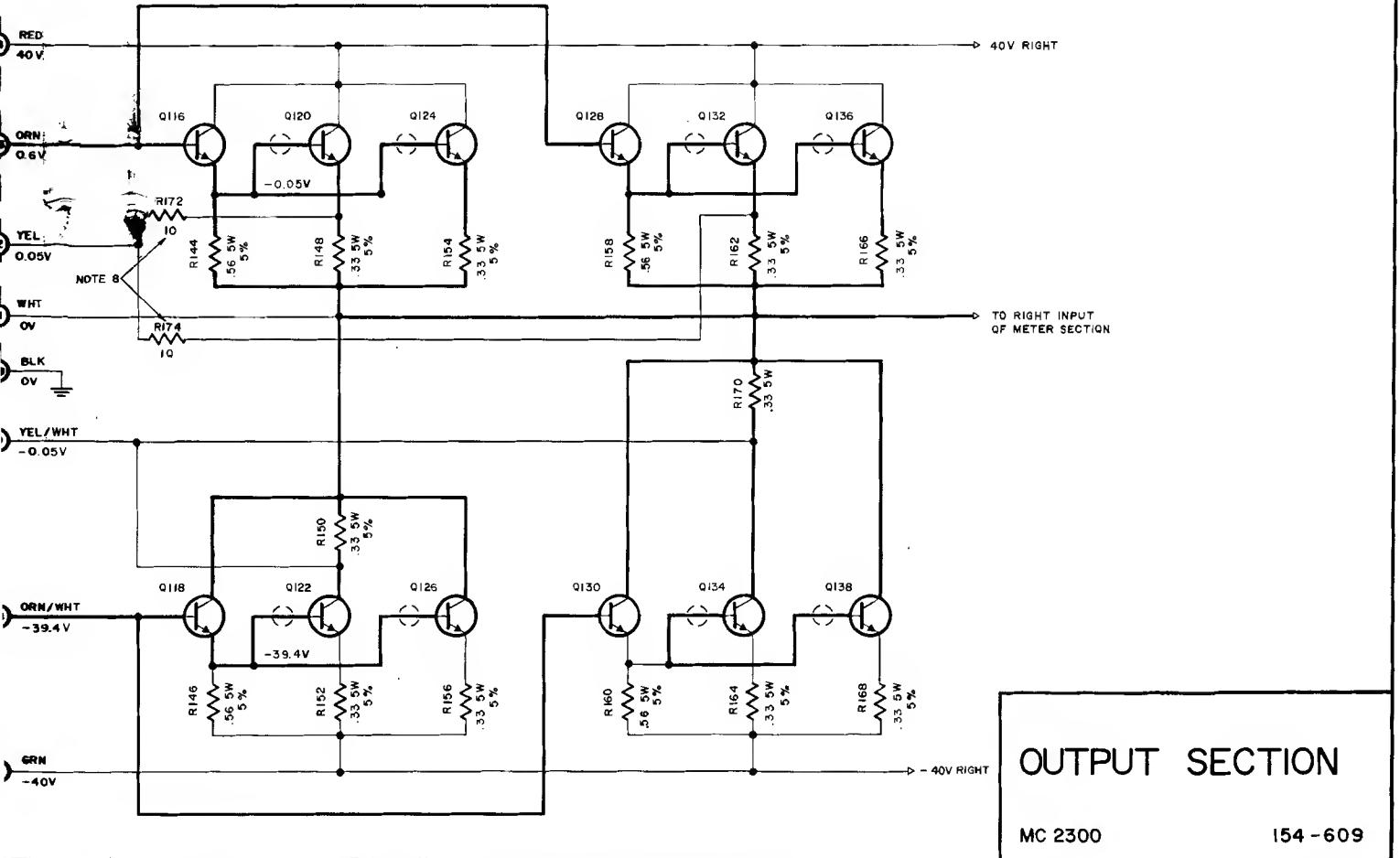
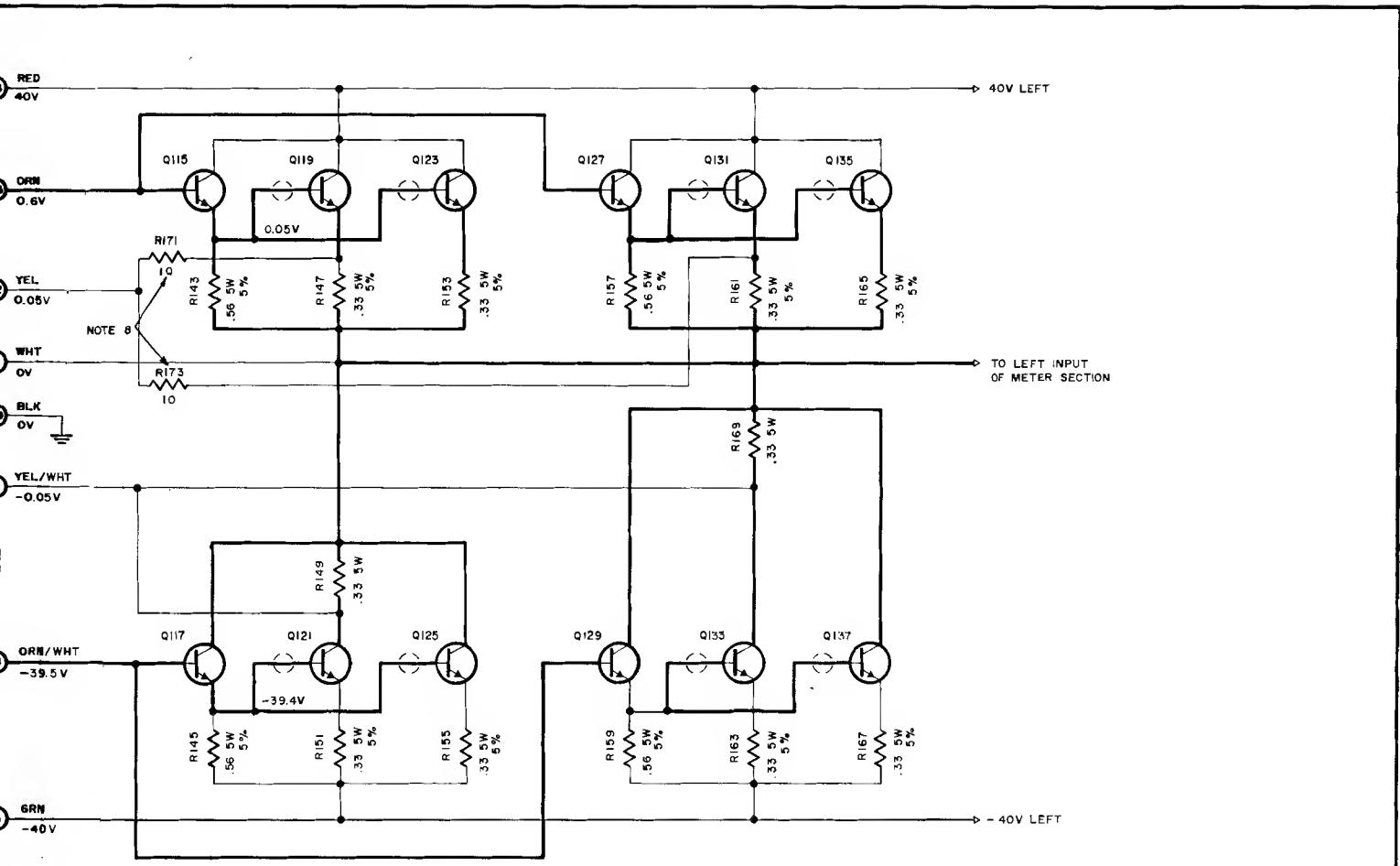


OUTPUT PC BOARD 044-243

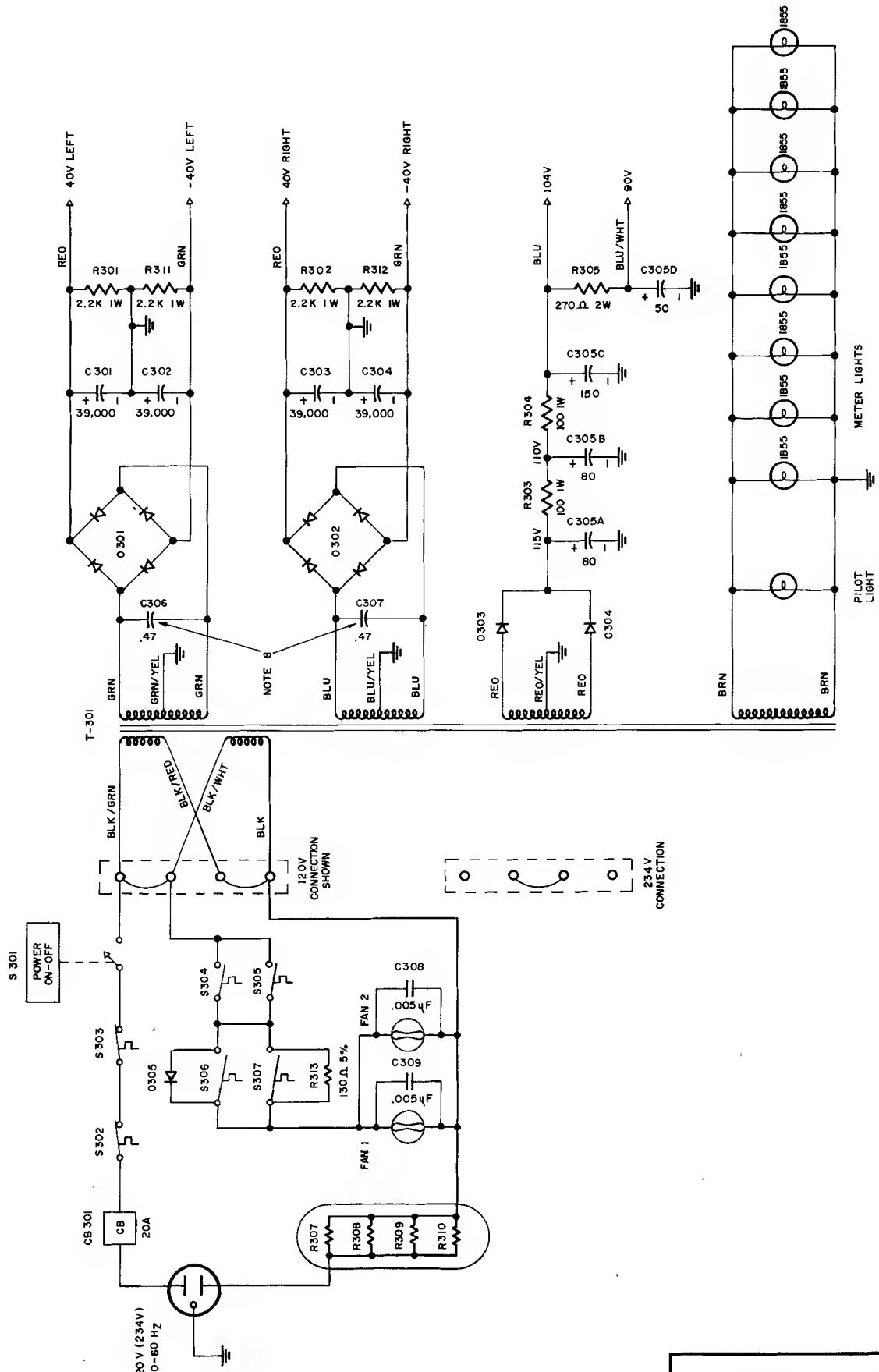


OUTPUT PC BOARD 044-243



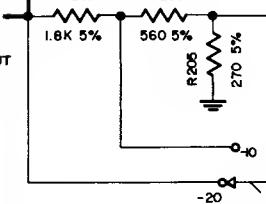


OUTPUT SECTION



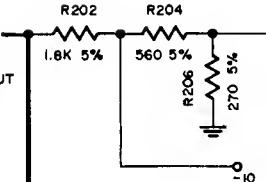
POWER SUPPLY SECTION

LEFT INPUT
(FROM LEFT OUTPUT OF POWER OUTPUT SECTION)

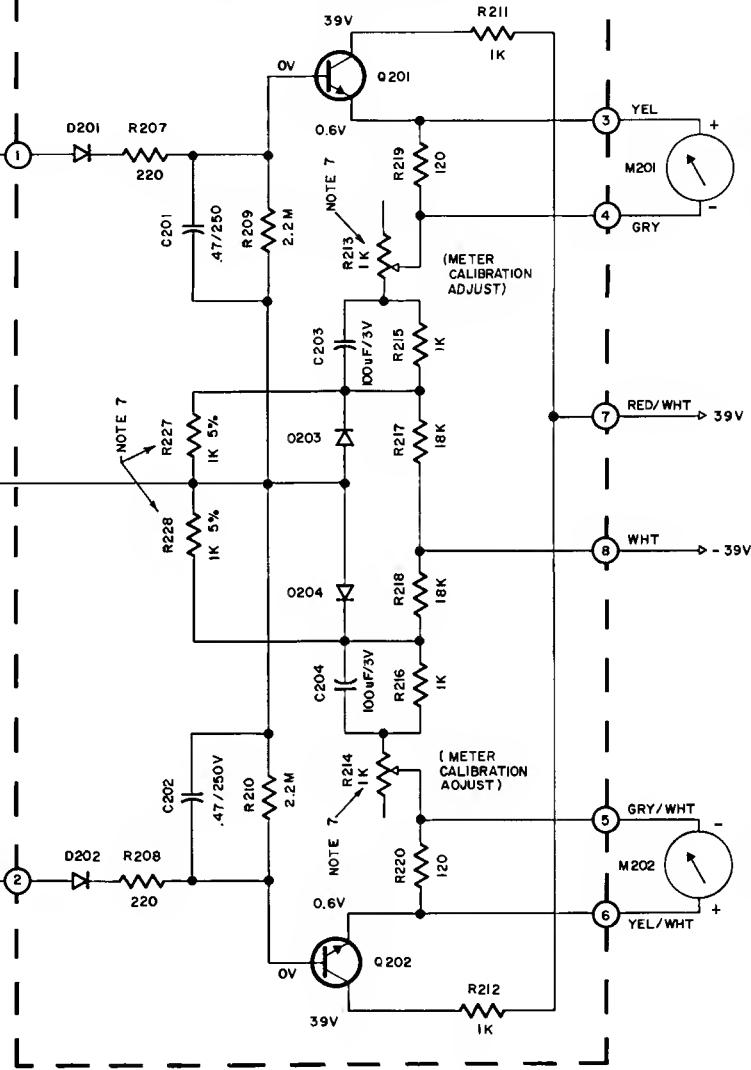


S201
METER RANGE

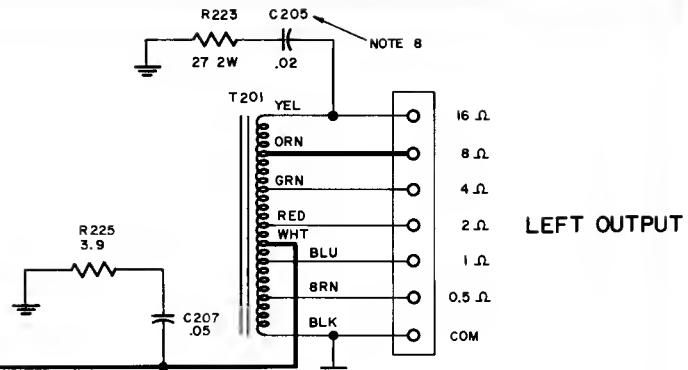
RIGHT INPUT
(FROM RIGHT OUTPUT OF POWER OUTPUT SECTION)



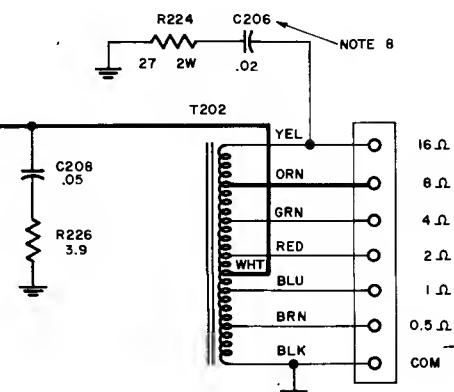
METER SECTION PC BOARD 043-7II



METER SECTION



LEFT OUTPUT



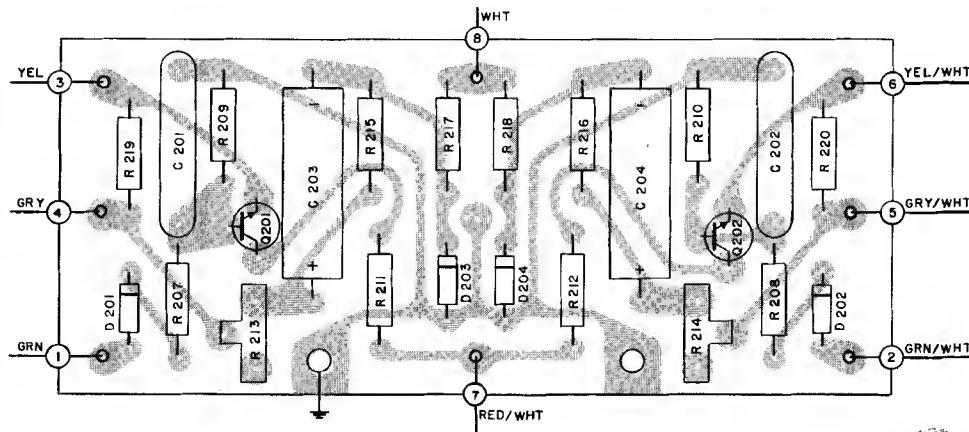
RIGHT OUTPUT

SCHEMATIC NOTES

MC 2300

1. Unless otherwise specified: Resistance values are in ohms, 1/2 watt, and 10% tolerance; capacitance values smaller than 1 are in microfarads (μF); capacitance values greater than 1 are in picofarads (pF); inductors are in microhenries (μH).
2. Printed circuit board components are outlined on the schematics by dotted lines. The circled numbers on the dotted lines correspond to the numbers on the PC board layouts.
3. The heavy lines on the schematics denote the primary signal path.
4. The terminal numbering of rotary switches is for reference only.
5. All voltages indicated on the schematics are measured under the following conditions:
 - a. Use of an 11 megohm impedance VTVM.
 - b. All voltages $\pm 10\%$ with respect to chassis ground.
 - c. No signal at input terminals.
 - d. AC input at 120 volts AC, 50/60Hz.
 - e. Front panel controls at:

Left Gain	FULLY CCW
Meter Range	FULLY CCW
Right/Mono Gain	FULLY CCW
Power	ON
6. In units with Serial No.'s below 1Y110: R137, R138, R141 and R142 are 10Ω 10% 1/2W.
7. In units with Serial No.'s below 1Y329: R213 and R214 are 5K. When R213 and R214 are 5K pots, R227 and R228 are used.
8. In early units: C9 and C10 are $10\mu\text{F}$; R23, R24, R171, R172, R173, R174, C306 and C307 are not used and C205 and C206 are $.01\mu\text{F}$.
9. In units with Serial No.'s below 2Y160: C5 and C6 were $680\mu\text{F}$ 25V
10. In early units: D305, S302, S303, S304, S305, R313, S308, and S309 are not used.



METER SECTION PRINTED CIRCUIT BOARD 043-711

REPLACEMENT PARTS

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.
Customer Service Department
2 Chambers Street
Binghamton, New York 13903
(telephone 607-723-3512)

CAPACITORS

Symbol Number		Description	Part Number
C3,4	Mylar	.47μF 250V	064-045
C5,6	Elect.	470μF 25V	066-228
C9,10	Elect.	1.5μF 36V	066-158
C11,12	Elect.	100μF 16V	066-227
C101,102	Elect.	330μF 3V	066-105
C121,122	Elect.	150μF 63V	066-205
C201,202	Mylar	.47μF 250V	064-045
C203,204	Elect.	100μF 16V	066-227
C301,302	Elect.	39000μF 40V	066-119
C303,304	Elect.	39000μF 40V	066-119
C305	Elect.	80/80/150/50μF 200/200/150/150V	066-095

DIODES

D101,102	Si. signal diode	070-047
D103,104	Bias diode	070-046
D105,106	Si. signal diode	070-047
D107,108	Si. signal diode	070-047
D201,202	Ge. signal diode	070-052
D203,204	Ge. signal diode	070-052
D301,302	Rectifier bridge	070-050
D303,304	Si. rectifier	070-031

TRANSISTORS

Q1,2	Si. NPN transistor	132-092
Q3,4	Si. NPN transistor	132-092
Q5,6	Si. PNP transistor	132-056
Q101,102	Si. PNP transistor	132-056
Q103,104	Si. PNP transistor	132-056
Q105,106	Si. PNP transistor	132-028
Q107,108	Si. NPN transistor	132-021
Q109,110	Si. PNP transistor	132-032
Q111,112	Si. NPN transistor	132-038
Q113,114	Si. PNP transistor	132-039

Q115,116	Si. NPN transistor	132-070
Q117,118	Si. NPN transistor	132-070
Q119,120	Si. NPN transistor	132-070
Q121,122	Si. NPN transistor	132-070
Q123,124	Si. NPN transistor	132-070
Q125,126	Si. NPN transistor	132-070
Q127,128	Si. NPN transistor	132-070
Q129,130	Si. NPN transistor	132-070
Q131,132	Si. NPN transistor	132-070
Q133,134	Si. NPN transistor	132-070
Q135,136	Si. NPN transistor	132-070
Q137,138	Si. NPN transistor	132-070
Q201,202	Si. NPN transistor	132-095
POTENTIOMETERS		
R1	Left gain control	134-233
R2	Right/Mono gain control	134-233
R213,214	Meter adjust	134-257
RESISTORS		
R117,118	Wirewound 3.6k 5%	5W 139-096
R143,144	Wirewound .56Ω	5W 139-081
R145,146	Wirewound .56Ω	5W 139-081
R147,148	Wirewound .33Ω	5W 139-080
R149,150	Wirewound .33Ω	5W 139-080
R151,152	Wirewound .33Ω	5W 139-080
R153,154	Wirewound .33Ω	5W 139-080
R155,156	Wirewound .33Ω	5W 139-080
R157,158	Wirewound .33Ω	5W 139-080
R159,160	Wirewound .33Ω	5W 139-080
R161,162	Wirewound .33Ω	5W 139-080
R163,164	Wirewound .33Ω	5W 139-080
R165,166	Wirewound .33Ω	5W 139-080
R167,168	Wirewound .33Ω	5W 139-080
R301,302	Wirewound 3.6Ω	5W 139-013
R307,308	Thermistor	144-012
R309,310	Thermistor	144-012
R313	Wirewound	139-013
METERS		
M201,202	Meter (Power level)	124-018
SWITCHES		
S1	Mono/Stereo switch	148-019
S201	Meter range switch	146-152

S301	Power on-off switch	153-012
S302,303	Thermal cut-out	153-015
S304,305	Thermal cut-out	153-013
S306,307	Thermal cut-out	153-011
TRANSFORMERS		
T201,202	Audio autoformer	044-244
T301	Power transformer	044-242
CIRCUIT BREAKER		
CB301	Circuit breaker 20A	088-006
LAMPS		
#1866 (meter)		058-014
Pilot lamp		058-040
FRONT PANEL & TRIM		
Front panel		002-345
Side frame (right)		043-830
Side frame (left)		043-831
Handles		018-152
Left gain knob		090-106
Right/Mono gain knob		090-106
Meter range knob		090-106
Meter bezel		020-022
MISCELLANEOUS ITEMS		
Shipping carton		044-379
Owners manual		038-662
AC line cord		170-038
Hardware package		044-240
Cooling fan		098-144
Cooling fan guard		098-143